nova230 for Danfoss

User's Manual

7001044003 R1

This manual refers to the latest protocol
EPROM 501159.001 Index. a
and version 1.0 of the parameterising program
230Danf.xls

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Trademarks

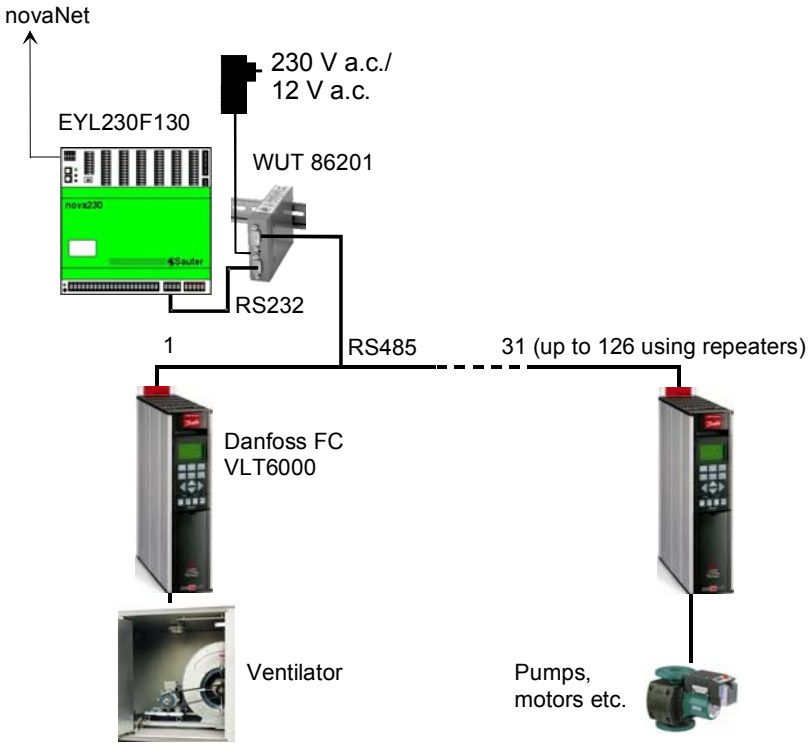
Designer	Trademark of Micrografx, Inc.
Micrografx Designer	Trademark of Micrografx, Inc.
Media Manager	Trademark of Micrografx, Inc.
Windows	Trademark of Microsoft Corporation
Microsoft Office 97 Professional	Trademark of Microsoft Corporation
MS Office	Trademark of Microsoft Corporation
Microsoft Access 97	Trademark of Microsoft Corporation
Microsoft Office 2000	Trademark of Microsoft Corporation
Microsoft Word	Trademark of Microsoft Corporation
Acrobat Reader	Adobe Systems Incorporated
Pentium	Trademark of Intel Corporation

1 Introduction

The nova230 is a compact automation station with interface function and belongs to the EY3600 family of systems.
The nova230 for Danfoss (EYL 230 F130, compact AS Danfoss VLT6000) enables *Danfoss* frequency converters of the VLT6000 series to be linked to Sauter's automation systems.
These frequency converters (FCs) are interlinked via an RS485 bus. Up to 31 FCs can be connected in parallel. By using repeaters, up to 126 FCs can be networked. This RS485 bus is then connected with the serial output of the EYL 230 via an RS232/RS485 interface converter (e.g. W&T 86201).
The data points for the EYL 230 F130 are generated using an *Excel* form. All the necessary operating parameters and data-point information are entered on the form and then a data record is created; this is transmitted serially to the EYL 230 and held captive in a non-volatile memory. When the station is re-started, these operating data are read from the EEPROM and the parameterised data points are polled.
Setpoints and commands are transferred spontaneously to the frequency converters. Possible data points include operating parameters, status, alarm bits, setpoints and binary commands.
A possible communication fault between the EYL 230 and the FCs is also provided for the BMS in an MFA.
To make it easier to put the unit into service, it is possible to log the communication between the EYL 230 and the FCs on a terminal.

2 System structure

Schematic for system structure.



3 Connecting the components

The following connections should be established between the components:-

RS232 plug for EYL 230 and RS485 converter

EYL 230 RS-232		RS485 converter W&T #86201
Pin 3	o-->-----------------------------o	Pin 2 (Din)
Pin 2	o--<-----------------------------o	Pin 3 (Dout)
Pin 5	o-------------------------------o	Pin 5 (GND)

N.B.: A screening braiding should be fitted on both sides at Pin5 (GND).

W&T86201 converter for the Danfoss VLT6000 (RS485 bus)

RS485 converter W&T #86201		Danfoss VLT6000 Terminal strip
Pin 1+2	o-------------------------------o	Terminal 69 (RS485-N)
Pin 6+7	o-------------------------------o	Terminal 68 (RS485-P)

The screening of the RS485 cable should be put to terminal 61.

The terminals of the VLT6000 are identified as per the following table. For an exact description of the functions, consult the VLT6000's manual.

Terminal identification	Terminal	Function	Remarks
Acknowledge	16	Digital input	
Block	17		
Operation/Stop	18		
Reverse	19		
Common GND	20	GND	
Lock	27		
Fixed speed	29		
Parameter-set selector	32		
Parameter-set selector	33		
+24 V Out	12+13	+24V output	
4-20mA Input	60	Current input	
0-10 V d.c. setpoint input	53	Setpoint input 1	
0-10 V d.c. setpoint input	54	Setpoint input 2	
+10 V output	50	Reference output	
Three-phase mains input	91+92+93	Mains power supply	
Motor outputs	96...99	Three-phase output	
Fault indicator	1+2+3	Relay 1 240V/2A	
'Power on' indicator	4+5	Relay 2 50V/1A	
Output current indicator	42	Analogue value 4-20mA	
Output speed indicator	45	Analogue value 4-20mA	
GND for analogue values	39	GND for KL42+45	

4 Device settings

4.1 Danfoss frequency converter VLT6000

The settings and the behaviour of the VLT6000 are influenced via parameters, which are entered via the VLT's operating panel. Two levels have been provided for this.

- In level 1 (standard), which is accessed by pressing the 'Quick Menu' button, only the most commonly-used values can be influenced.
- Level 2 (advanced) is accessed by pressing the 'Extended Menu' button; all parameters can be altered or retrieved here.

For communication with the VLT6000, it is possible to communicate using either the Danfoss FC protocol or an additional LonWorks card via the LON protocol.
The setting as to which of the two protocols is active is made via parameter 928 in the Extended Menu. The two settings are described below:-

Parameter 928 – process control –

In force	Additional LON card is active; FC protocol is de-activated.
Blocked	FC protocol is activated; additional LON card is de-activated. This setting should be chosen for the system integration described here.

In addition, communication is affected by the following parameters:-

Parameter	Meaning		Choose setting
500	Type of protocol:	0 = FC protocol 1 = Metasys N2 2 = Landis/Staefa FLN	0 = FC protocol
501	Address (bus address from VLT) 0...126 valid		0...126
502	Baud rate (300, 600, 1200, 2400, 4800, 9600)		9600
503	Freewheel lock:	0 = Digital input 1 = Serial communication 2 = Bus and terminal 3 = Bus or terminal	Consult *Danfoss* before setting.
504	DC brake:	0 = Digital input 1 = Serial communication 2 = Bus and terminal 3 = Bus or terminal	Consult *Danfoss* before setting.
505	Start:	0 = Digital input 1 = Serial communication 2 = Bus and terminal 3 = Bus or terminal	Consult *Danfoss* before setting.
506	Reverse:	0 = Digital input 1 = Serial communication 2 = Bus and terminal 3 = Bus or terminal	Consult *Danfoss* before setting.
507	Parameter-set selector:	0 = Digital input 1 = Serial communication 2 = Bus and terminal 3 = Bus or terminal	Consult *Danfoss* before setting.

A detailed description of each of the parameters can be found in the VLT6000's engineering manual.

4.2 Connecting and setting the RS232/485 converter

The description refers to the RS232/485 converter of the type #86201 supplied by the company *W&T*. This converter is electrically isolated, which prevents unwanted earth circuits and problems connected therewith.
The circuitry should be created as described in Item 1.3. The DIP switches inside the unit should be set as follows:-

S1-1: ON S1-2: ON S1-3: OFF S1-4: ON
S1-5: OFF S1-6: ON S1-7: ON S1-8: OFF

N.B.: S1-6 and S1-7 represent the bus terminating resistor
S1-1...5 define the operating mode
S1-8 is always OFF

In 'send' and 'receive' modes, the red LED on the converter should flicker.
The converter should be connected to the power supply unit that is included in delivery.

5 The VLT6000's data points

Sending from BMS → FC, the following data points are possible:-

Data point	Parameter number	Unit	FBD module	Card code
Command: setpoint	1	%	AO	0x80 or 0xA0
Command: FC start/stop	2		DO	0x20 or 0x30
Command: fault reset	3		DO	0x20 or 0x30

The VLT6000's data points

Reading from FC → BMS, the following data points are possible:-
N.B.: ZW = status word, AW = alarm word
EZW = extended status word, WW = warning word

Data point	Parameter number	Unit	FBD module	Card code
Setpoint	503	%	AI	0x70
Setpoint	510	%	AI	0x70
Actual value	511	%	AI	0x70
Frequency	512	Hz	AI	0x70
Current	514	A	AI	0x70
Consumption	515	KW	AI	0x70
Motor voltage	517	V	AI	0x70
Intermediate-circuit voltage	518	V	AI	0x70
Motor temperature	519	°C	AI	0x70
VLT temperature	520	°C	AI	0x70
Digital input KL33	521 Bit 0		BI(fC8)	0x10
Digital input KL32	521 Bit 1		BI(fC8)	0x10
Digital input KL29	521 Bit 2		BI(fC8)	0x10
Digital input KL27	521 Bit 3		BI(fC8)	0x10
Digital input KL19	521 Bit 4		BI(fC8)	0x10
Digital input KL18	521 Bit 5		BI(fC8)	0x10
Digital input KL17	521 Bit 6		BI(fC8)	0x10
Digital input KL16	521 Bit 7		BI(fC8)	0x10
Analogue input KL53	522	V	AI	0x10
Analogue input KL54	523	V	AI	0x10
Analogue input KL60	524	mA	AI	0x10
Pulse setpoint	525	Hz	AI	0x10
External setpoint	526	%	AI	0x10
ZW: Control ready	527 Bit 0		BI(fC8)	0x10
ZW: Drive ready	527 Bit 1		BI(fC8)	0x10
ZW: Stand-by	527 Bit 2		BI(fC8)	0x10
ZW: Cut-out	527 Bit 3		BI(fC8)	0x10
ZW: Warning	527 Bit 7		BI(fC8)	0x10
ZW: Speed OK	527 Bit 8		BI(fC8)	0x10
ZW: Remote control active	527 Bit 9		BI(fC8)	0x10
ZW: Frequency OK	527 Bit 10		BI(fC8)	0x10
ZW: Operation	527 Bit 11		BI(fC8)	0x10
ZW: Voltage fluctuation	527 Bit 13		BI(fC8)	0x10
ZW: Current limit	527 Bit 14		BI(fC8)	0x10
ZW: Thermal warning	527 Bit 15		BI(fC8)	0x10
Heat-sink temp.	528	°C	AI	0x70
AW: Unknown alarm	529 Bit 0		BI(fC8)	0x10
AW: Cut-out	529 Bit 1		BI(fC8)	0x10
AW: Auto-optimisation error	529 Bit 2		BI(fC8)	0x10

Data point	Parameter number	Unit	FBD module	Card code
AW: Short circuit	529 Bit 5		BI(fC8)	0x10
AW: Switching-mode fault	529 Bit 6		BI(fC8)	0x10
AW: Earthing fault	529 Bit 7		BI(fC8)	0x10
AW: Excess current	529 Bit 8		BI(fC8)	0x10
AW: Current limit	529 Bit 9		BI(fC8)	0x10
AW: Motor thermistor	529 Bit 10		BI(fC8)	0x10
AW: Motor overload	529 Bit 11		BI(fC8)	0x10
AW: Inverter overload	529 Bit 12		BI(fC8)	0x10
AW: Under-voltage	529 Bit 13		BI(fC8)	0x10
AW: Excess voltage	529 Bit 14		BI(fC8)	0x10
AW: Mains-phase fault	529 Bit 15		BI(fC8)	0x10
AW: Setpoint error	529 Bit 16		BI(fC8)	0x10
AW: Heat-sink temp.	529 Bit 17		BI(fC8)	0x10
AW: Motor phase W is missing	529 Bit 18		BI(fC8)	0x10
AW: Motor phase V is missing	529 Bit 19		BI(fC8)	0x10
AW: Motor phase U is missing	529 Bit 20		BI(fC8)	0x10
AW: Drive fault	529 Bit 22		BI(fC8)	0x10
AW: Output current low	529 Bit 23		BI(fC8)	0x10
AW: Safety stop	529 Bit 24		BI(fC8)	0x10
EZW (extended status word)	532 (see VLT manual, page 151)		BI(fC8)	0x10
WW (warning word)	531 (see VLT manual, page 151)		BI(fC8)	0x10
Hours run, VLT	600	hrs	CI	0xD0
Motor running time	601	hrs	CI	0xD0
KWH counter	602	KWh	CI	0xD0

6 Generation of data for the AS

Data points are generated using an *Excel* application, which can run with either *Excel 97* or *Excel 2000*. This allows up to 191 data points to be freely parameterised. Each of the data points is chosen via drop-down lists within the table. Therefore, incorrect entries are practically impossible.
The first MFA to be generated is MFA254. All other MFAs follow in descending order until (at the most) MFA64 (smallest soft address).
Generation should take place from MFA254 onwards, leaving no gaps.
MFA255 cannot be used, since it is reserved for the communication fault message.

6.1 Tables

The application is split into four tables:-

1. Parameters
2. Data
3. MDBKONV
4. Language text (write-protected)

The following entries should be made for the whole installation (parameters table):-

1. Date of creation
2. Name of installation
3. Protocol (fixed, no change required)
4. Baud rate: 9600 default
5. novaPro AS number 0...30
6. EYL 230 group address
7. Transmission channel, EYS290 card or (with a router) EYZ291, 21, 22 etc.

The following entries should be made for each data point (data table):-

1. Bus address of the VLT6000 0...126
2. Choice of type of data point from the combobox
3. MFA is fixed in the list and cannot be changed

It is also possible to duplicate already-generated data lines using *Excel* functions such as Select, Copy, Paste, Auto-complete etc.
This may help to save time, particularly in the case of large installations requiring a lot of generation work.

Excerpts from a generation table such as the one described above (*Excel* tables) are shown below.

'Parameters' table

230Danf.xls

	A	C
1	**Allgemeine Kommunikationsparameter Danfoss FU VLT6000**	**Wert**
2		
5	Erstellungsdatum	12.10.00
7	Anlagenname	230DANF
9	Protokoll	novaNet<-->Danfoss-VLT
25	Baudrate	9600
47	novaPro-AS-Nummer	0
48	EYL230-Gruppenadresse	1
49	Übertragungskanal Karte 290/291	21
50		

Parameter / Daten / MDBKONV / Sprachtexte

'Data' table

230Danf.xls

			Danfoss VLT6000		EYL230F130	
	Nr	**Bus-Adresse vom FU**	**Parameter**		**MFA**	**Zykl.**
5	**1**	5	Befehl: Sollwert % (1)		254	1
6	**2**	1	Befehl: FU Start/Stop (2)		253	1
7	**3**	1	Befehl: Störungs-Reset (3)		252	1
8	**4**	1	Sollwert [%] (509)		251	
9	**5**	1	Sollwert [%] (510)		250	
10	**6**	1	Istwert [%] (511)		249	
11	**7**	1	Frequenz [Hz] (512)		248	
12	**8**	1	Strom [A] (514)		247	
13	**9**	1	Leistung [KW] (515)		246	
14	**10**	1	Motorspannung [V] (517)		245	
15	**11**	2	Befehl: Sollwert % (1)		244	
16	**12**	2	Befehl: FU Start/Stop (2)		243	
17	**13**	2	Befehl: Störungs-Reset (3)		242	
18	**14**	2	Sollwert [%] (509)		241	
19	**15**	2	Sollwert [%] (510)		240	
20	**16**	2	Istwert [%] (511)		239	
21	**17**	2	Frequenz [Hz] (512)		240	
22	**18**	2	Strom [A] (514)		237	
23	**19**	2	Leistung [KW] (515)		236	

6.2 Macro control

The various functions (macros) are controlled by buttons in the symbol bar (*Danfoss*). These buttons have the following functions:-

Convert the data-point table into an *Intel* hex file.

Call up the window for downloading data into the EYL 230.

Create the novaPro text table (PZT import).

The 'Generate' button starts an automatic check of the generation operation. If there are any faulty lines, a message appears, indicating the faulty line (the cursor is in the faulty field).
This procedure should be repeated until all lines are free of errors (when a message to this effect will appear).
Then, an *Intel* hex file with the data points will be created automatically. This hex file presents the generation for the EYL 230, and should then be loaded into the AS by using the 'Download' button.

In addition, an 'MDBKONV' table is created; this contains a ready-made generation table for novaPro. This can be imported into another full generation table for novaPro by using the 'PZT import' (i.e. import the data-point table) button of the MDBKONV4 application. The 'Station', 'Installation', 'Transmission channel' and 'Building automation' columns are taken from the 'Parameters' table; the remaining lines are read from the 'Data' table and are prepared accordingly.

An example is shown below:-

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
1	Stationsnummer	Anlage	Kanal	DE Name	Hausadresse	Langtext	Typ	I	MFA	DP-Typ	Typ-Extension	Rasterschwelle	Min-Wert	Max-Wert	Nachkommast.	Dim-ID	Passwort-ID	Produkt-Info	Wert-ID	Befehls-ID	Befehlsvorg. Start, Typ	Befehlsvorg. Start, Wert	Letzt. Schalte.Bef. Fel	Kalender	Ext. Treiber	Wahlberechtigung	Befehlsgabe sperren	LogLevel	MDB-Upload	
2	0	230DANF	21	N001X254	HA-Danfoss-254	Befehl: Sollwert % (1)	0	1	254	7		0,1	0	100	1		0		0	0	3	0	1	1	0	0	0	0	
3	0	230DANF	21	N001B253	HA-Danfoss-253	Befehl: FU Start/Stop (2)	0	1	253	4	0						0		2	33	3	0	1	1	0	0	0	0	
4	0	230DANF	21	N001B252	HA-Danfoss-252	Befehl: Störungs-Reset (3)	0	1	252	4	0						0		2	33	3	0	1	1	0	0	0	0	
5	0	230DANF	21	N001M251	HA-Danfoss-251	Sollwert [%] (509)	0	1	251	2							0		0	0	0	0	0	0	0	0	0	0	
6	0	230DANF	21	N001M250	HA-Danfoss-250	Sollwert [%] (510)	0	1	250	2							0		0	0	0	0	0	0	0	0	0	0	
7	0	230DANF	21	N001M249	HA-Danfoss-249	Istwert [%] (511)	0	1	249	2							0		0	0	0	0	0	0	0	0	0	0	
8	0	230DANF	21	N001M248	HA-Danfoss-248	Frequenz [Hz] (512)	0	1	248	2							0		0	0	0	0	0	0	0	0	0	0	
9	0	230DANF	21	N001M247	HA-Danfoss-247	Strom [A] (514)	0	1	247	2							0		0	0	0	0	0	0	0	0	0	0	
10	0	230DANF	21	N001M246	HA-Danfoss-246	Leistung [KW] (515)	0	1	246	2							0		0	0	0	0	0	0	0	0	0	0	
11	0	230DANF	21	N001M245	HA-Danfoss-245	Motorspannung [V] (517)	0	1	245	2							0		0	0	0	0	0	0	0	0	0	0	
12	0	230DANF	21	N001X244	HA-Danfoss-244	Befehl: Sollwert % (1)	0	1	244	7		0,1	0	100	1		0		0	0	3	0	1	1	0	0	0	0	
13	0	230DANF	21	N001B243	HA-Danfoss-243	Befehl: FU Start/Stop (2)	0	1	243	4	0						0		2	33	3	0	1	1	0	0	0	0	
14	0	230DANF	21	N001B242	HA-Danfoss-242	Befehl: Störungs-Reset (3)	0	1	242	4	0						0		2	33	3	0	1	1	0	0	0	0	
15	0	230DANF	21	N001M241	HA-Danfoss-241	Sollwert [%] (509)	0	1	241	2							0		0	0	0	0	0	0	0	0	0	0	
16	0	230DANF	21	N001M240	HA-Danfoss-240	Sollwert [%] (510)	0	1	240	2							0		0	0	0	0	0	0	0	0	0	0	
17	0	230DANF	21	N001M239	HA-Danfoss-239	Istwert [%] (511)	0	1	239	2							0		0	0	0	0	0	0	0	0	0	0	
18	0	230DANF	21	N001M238	HA-Danfoss-238	Frequenz [Hz] (512)	0	1	238	2							0		0	0	0	0	0	0	0	0	0	0	
19	0	230DANF	21	N001M237	HA-Danfoss-237	Strom [A] (514)	0	1	237	2							0		0	0	0	0	0	0	0	0	0	0	
20	0	230DANF	21	N001M236	HA-Danfoss-236	Leistung [KW] (515)	0	1	236	2							0		0	0	0	0	0	0	0	0	0	0	
21	0	230DANF	21	N001M235	HA-Danfoss-235	Motorspannung [V] (517)	0	1	235	2							0		0	0	0	0	0	0	0	0	0	0	
22	0	230DANF	21	N001X234	HA-Danfoss-234	Befehl: Sollwert % (1)	0	1	234	7		0,1	0	100	1		0		0	0	3	0	1	1	0	0	0	0	
23	0	230DANF	21	N001B233	HA-Danfoss-233	Befehl: FU Start/Stop (2)	0	1	233	4	0						0		2	33	3	0	1	1	0	0	0	0	
24	0	230DANF	21	N001B232	HA-Danfoss-232	Befehl: Störungs-Reset (3)	0	1	232	4	0						0		2	33	3	0	1	1	0	0	0	0	
25	0	230DANF	21	N001M231	HA-Danfoss-231	Sollwert [%] (509)	0	1	231	2							0		0	0	0	0	0	0	0	0	0	0	
26	0	230DANF	21	N001M230	HA-Danfoss-230	Sollwert [%] (510)	0	1	230	2							0		0	0	0	0	0	0	0	0	0	0	
27	0	230DANF	21	N001M229	HA-Danfoss-229	Istwert [%] (511)	0	1	229	2							0		0	0	0	0	0	0	0	0	0	0	
28	0	230DANF	21	N001M228	HA-Danfoss-228	Frequenz [Hz] (512)	0	1	228	2							0		0	0	0	0	0	0	0	0	0	0	
29	0	230DANF	21	N001M227	HA-Danfoss-227	Strom [A] (514)	0	1	227	2							0		0	0	0	0	0	0	0	0	0	0	

This table now serves as the basis for a full MDBKONV generation. The tab-separated export file (PZT3600.TXT) created from this is subsequently imported into the PZT (data-point table) editor of novaPro and is then available in the PZT list.

7 Generation in the FBD editor

7.1 Generating VLT6000 data points

Schematics are generated in the FBD editor with the following firmware modules:-

- BI: messages, alarms from VLT
- AI: measured values from VLT
- DO: commands to VLT
- AO: setpoints to VLT

The firmware module to be chosen for the relevant DP type can be found in the table in Ch. 1.5.

7.2 Generating collective alarms

On the EYL 230, the MFA255 is fixed with a special function and cannot be used for anything else. If one of the VLTs fails, this address is set to 1.

Function of MFA	**Firmware module in the FBD**	**AS card code**
Collective alarm for communication with the VLTs	BI(fC8)	0x10

8 Putting the EYL 230 F130 into operation

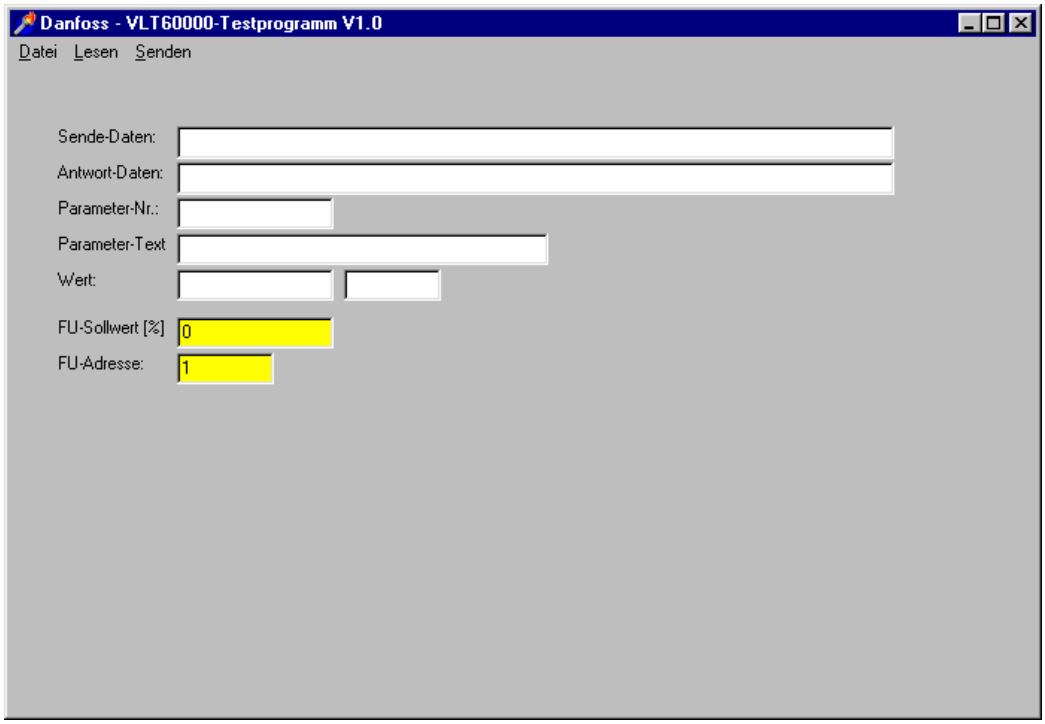
Procedure:-

1. For the transfer of data from the PC to the EYL 230, a data cable of the type VK291 (connecting cable PC→EYZ291) is used.
2. One end of this cable should be connected to COM1/COM2 on the PC, the other end to the RS232 plug on the EYL 230.
3. Switch off the EYL 230.
4. Put the test jumper on the EYL 230 to the 'TEST' position.
5. Switch on the EYL 230. The red and green LEDs light up.
6. Wait for 5 seconds (EYL 230 F130 self-test).
7. Press the 'Download' button in the symbol bar.
8. Each of these steps are again listed in the form that subsequently appears.
9. Choose the correct interface.
10. Press the 'Send' button. The hex lines are shown in the message line and transferred to the station. The telegrams can be read as they run through the message box.
11. If the transfer was successful, the EEPROM's internal programming will be forwarded to the EYL 230. If this has been carried out without faults, a message to this effect will appear. If faults occur, an error message appears.
12. If faults occur, the whole procedure should be repeated as from Item 3 above.
13. If the faults continue to occur, the cable link should be checked and another download carried out until the data have been successfully transmitted.
14. **Without a complete download, no data can be interrogated.**
15. These data are then again loaded from the EEPROM and a generation list is issued at the monitoring interface.
16. The green LED then flashes at intervals of one second. Parameterising is now complete and the EYL 230 can be switched off.
17. In order to work normally, the EYL 230's test jumper **must** be set back to the 'RUN' position and the station has to be re-started (i.e. switched OFF and then ON again).
18. During normal operation with the VLTs, the green LED flashes at intervals of one second.
    If the cycle LED is continuously on or continuously off, a fault has occurred.
    This usually indicates that there is an internal fault on the EYL 230, which should not normally occur.

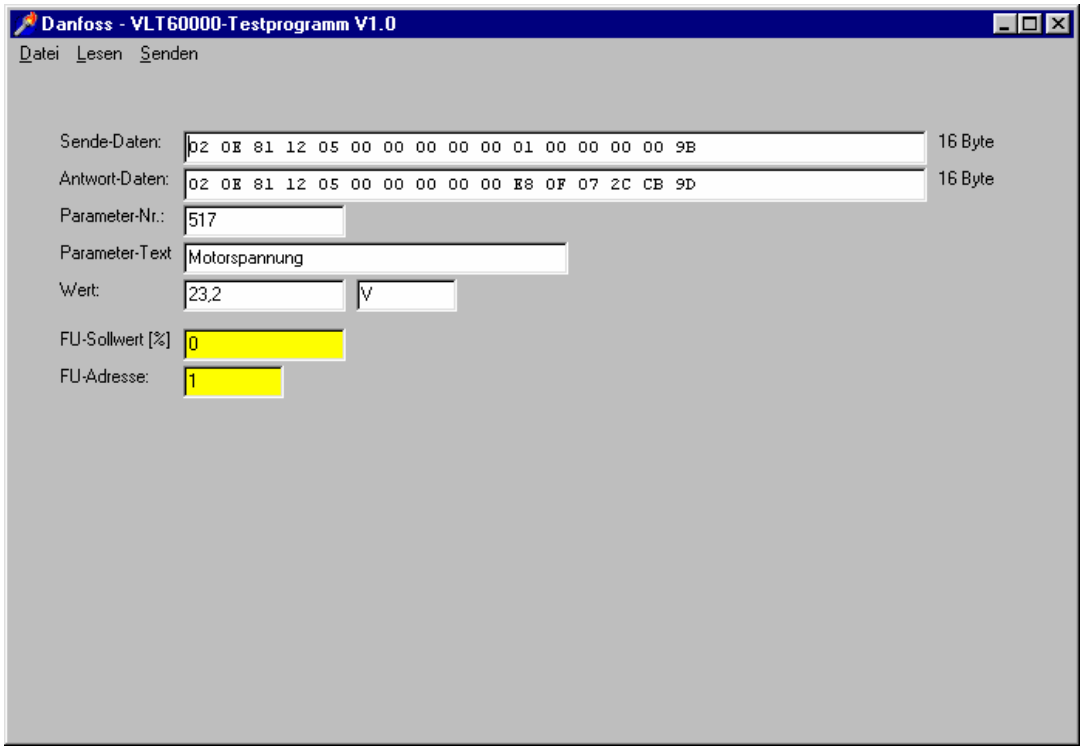
9 VLT commissioning software (PC)

To enable the system to be put into service more easily, there is a commissioning program available for the PC which allows the user to check communication to the VLT6000. It is a Windows program (Windows 9x and later) which is connected with the RS485 converter via the COM port instead of the EYL 230.
Any VLT address can be set, and data can be read from the FC and viewed, or data can be transferred to the VLT.
The program is called VLT6000.EXE and runs without the aid of any other files. Some screenshots are shown below.

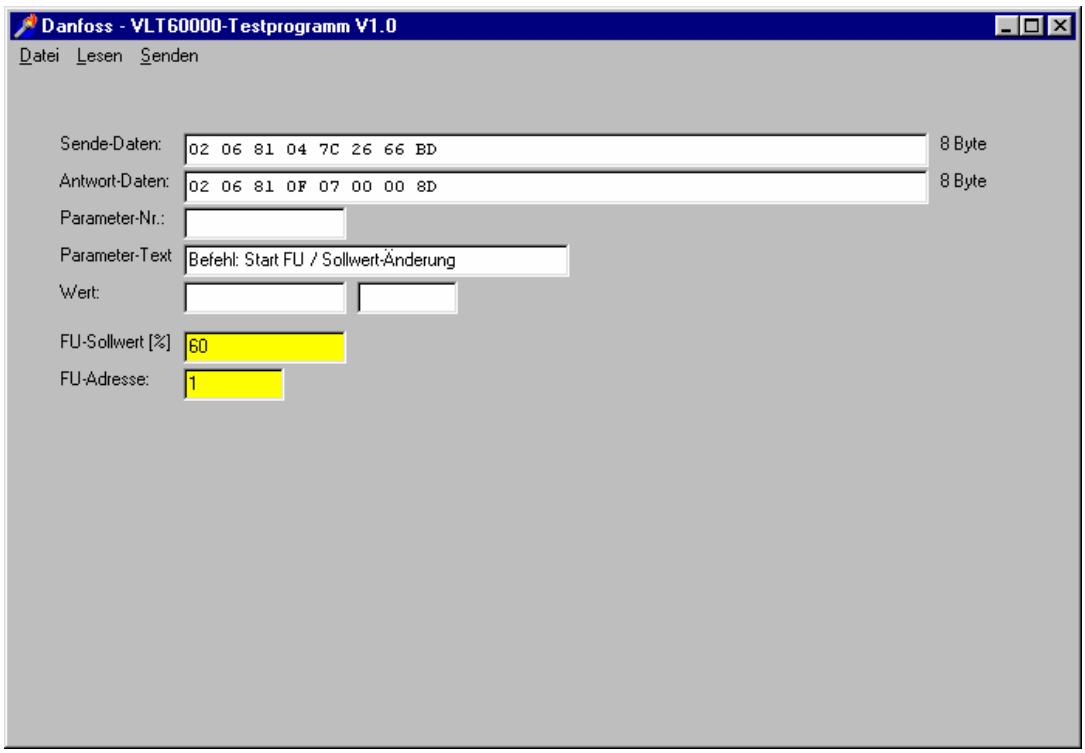
Main window:-



Read values by choosing the parameter using the 'Read' menu.


Danfoss - VLT60000-Testprogramm V1.0
Datei Lesen Senden
Sende-Daten: 02 0E 81 12 05 00 00 00 00 00 01 00 00 00 00 9B
16 Byte
Antwort-Daten: 02 0E 81 12 05 00 00 00 00 00 E8 0F 07 2C CB 9D
16 Byte
Parameter-Nr.: 517
Parameter-Text Motorspannung
Wert: 23,2 V
FU-Sollwert [%] 0
FU-Adresse: 1

Write a setpoint to the FC ('Send' menu → Start FC | Change setpoints).
To do so, the setpoint must be entered in % beforehand in the yellow field marked 'FC setpoint', and the right FC bus address must be stated.



10 Monitoring

On the EYL230F130, it is possible to introduce a monitoring circuit via terminal 126. To do so, a two-core cable (RX and GND) should be connected at this terminal and at the PC's COM port as follows:-

Pin assignment

AS side (terminal)		PC side (DB9 plug)
		1
126	⇒	2 RXD
		3 TXD
		4
⊥	⇔	5 GND
		6
		7
		8
		9

Terminal settings:-

9600 baud
8 data bit
no parity
1 stop-bit
no handshake

Therefore, the complete data traffic from the station to the VLTs can be recorded and logged at an ASCII terminal (*Norton*, *Hyperterm* etc.).
For this, the terminal program should be set to a baud rate of 9600, 8 data bit, no parity and a stop-bit without handshake.
The test jumper should be put from the RUN position to the TEST position approx. 5 seconds after starting the station.
Three different responses are shown below:-

Complete sequence after switching on for parameterising (jumper in test).

```
Program-Start EYL 230 F130 Danfoss-VLT6000 Ind 'a'/29.01.02)

 Download Datablock to AS...
100000005A0131322E31302E303000202000323370
100010003044414E46002020202020202020202057
10002000202020202020202020202020006E6F53
1000300076614E65743C2D2D3E44616E666F737320
100040002D564C5400202020202020202020000008D
10005000000000000000000000000125800801F1
100060004500000A020064000A01F40200320000A8
10007000000000000000000000007D000050300A1
1000800016010001 00FE0101000200FD0101000354
1000900000FC010101FD00FB000101FE00FA00016E
1000A00001FF00F90001020000F80001020200F760
1000B0000001020300F60001020500F5000102063E
1000C00000F40001020700F30001020800F2000141
1000D000020900F10001020900F00001020901EF2C
1000E0000001020902F00001020903ED000102090A
1000F00004EC0001020905EB0001020906EA000117
050100000020907E900FF
00000001FF

 Download O.K.!
   18 Lines
Programming User-EEPROM ...
N.^^^
 Done!
Reading User-EEPROM ...
^N^n^
 Done!

-------- Datapoint-List --------
Number of Data-Records =   22
Nr=   1 FCadr=  1 PNU=  1 Bit= 0 MFA=254 KC=A0 Opt=1
Nr=   2 FCadr=  1 PNU=  2 Bit= 0 MFA=253 KC=30 Opt=1
Nr=   3 FCadr=  1 PNU=  3 Bit= 0 MFA=252 KC=30 Opt=1
Nr=   4 FCadr=  1 PNU=509 Bit= 0 MFA=251 KC=70 Opt=0
Nr=   5 FCadr=  1 PNU=510 Bit= 0 MFA=250 KC=70 Opt=0
Nr=   6 FCadr=  1 PNU=511 Bit= 0 MFA=249 KC=70 Opt=0
Nr=   7 FCadr=  1 PNU=512 Bit= 0 MFA=248 KC=70 Opt=0
Nr=   8 FCadr=  1 PNU=514 Bit= 0 MFA=247 KC=70 Opt=0
Nr=   9 FCadr=  1 PNU=515 Bit= 0 MFA=246 KC=70 Opt=0
Nr=  10 FCadr=  1 PNU=517 Bit= 0 MFA=245 KC=70 Opt=0
Nr=  11 FCadr=  1 PNU=518 Bit= 0 MFA=244 KC=70 Opt=0
Nr=  12 FCadr=  1 PNU=519 Bit= 0 MFA=243 KC=70 Opt=0
Nr=  13 FCadr=  1 PNU=520 Bit= 0 MFA=242 KC=70 Opt=0
Nr=  14 FCadr=  1 PNU=521 Bit= 0 MFA=241 KC=10 Opt=0
Nr=  15 FCadr=  1 PNU=521 Bit= 0 MFA=240 KC=10 Opt=0
Nr=  16 FCadr=  1 PNU=521 Bit= 1 MFA=239 KC=10 Opt=0
Nr=  17 FCadr=  1 PNU=521 Bit= 2 MFA=240 KC=10 Opt=0
Nr=  18 FCadr=  1 PNU=521 Bit= 3 MFA=237 KC=10 Opt=0
Nr=  19 FCadr=  1 PNU=521 Bit= 4 MFA=236 KC=10 Opt=0
Nr=  20 FCadr=  1 PNU=521 Bit= 5 MFA=235 KC=10 Opt=0
Nr=  21 FCadr=  1 PNU=521 Bit= 6 MFA=234 KC=10 Opt=0
Nr=  22 FCadr=  1 PNU=521 Bit= 7 MFA=233 KC=10 Opt=0

 End of List
```

1. EYL 230 re-started (jumper in 'Run' or removed).
   N.B.: The presence of unusual characters (aÃ etc.) is quite normal and does not denote the presence of faults.

```
aÃColdboot (Power-Off)

 Program-Start EYL 230 F130 Danfoss-VLT6000 Ind 'a'/29.01.02)
Reading User-EEPROM ...
.....
 Done!

-------- Datapoint-List --------
Number of Data-Records =   22
Nr=   1 FCadr=  1 PNU=  1 Bit= 0 MFA=254 KC=A0 Opt=1
Nr=   2 FCadr=  1 PNU=  2 Bit= 0 MFA=253 KC=30 Opt=1
Nr=   3 FCadr=  1 PNU=  3 Bit= 0 MFA=252 KC=30 Opt=1
Nr=   4 FCadr=  1 PNU=509 Bit= 0 MFA=251 KC=70 Opt=0
Nr=   5 FCadr=  1 PNU=510 Bit= 0 MFA=250 KC=70 Opt=0
Nr=   6 FCadr=  1 PNU=511 Bit= 0 MFA=249 KC=70 Opt=0
Nr=   7 FCadr=  1 PNU=512 Bit= 0 MFA=248 KC=70 Opt=0
Nr=   8 FCadr=  1 PNU=514 Bit= 0 MFA=247 KC=70 Opt=0
Nr=   9 FCadr=  1 PNU=515 Bit= 0 MFA=246 KC=70 Opt=0
Nr=  10 FCadr=  1 PNU=517 Bit= 0 MFA=245 KC=70 Opt=0
Nr=  11 FCadr=  1 PNU=518 Bit= 0 MFA=244 KC=70 Opt=0
Nr=  12 FCadr=  1 PNU=519 Bit= 0 MFA=243 KC=70 Opt=0
Nr=  13 FCadr=  1 PNU=520 Bit= 0 MFA=242 KC=70 Opt=0
Nr=  14 FCadr=  1 PNU=521 Bit= 0 MFA=241 KC=10 Opt=0
Nr=  15 FCadr=  1 PNU=521 Bit= 0 MFA=240 KC=10 Opt=0
Nr=  16 FCadr=  1 PNU=521 Bit= 1 MFA=239 KC=10 Opt=0
Nr=  17 FCadr=  1 PNU=521 Bit= 2 MFA=240 KC=10 Opt=0
Nr=  18 FCadr=  1 PNU=521 Bit= 3 MFA=237 KC=10 Opt=0
Nr=  19 FCadr=  1 PNU=521 Bit= 4 MFA=236 KC=10 Opt=0
Nr=  20 FCadr=  1 PNU=521 Bit= 5 MFA=235 KC=10 Opt=0
Nr=  21 FCadr=  1 PNU=521 Bit= 6 MFA=234 KC=10 Opt=0
Nr=  22 FCadr=  1 PNU=521 Bit= 7 MFA=233 KC=10 Opt=0

 End of List
Nr= 10 Motor-Voltage        FCadr=  1 PNU=517 Value=21.700
Nr= 11 Internal-Voltage     FCadr=  1 PNU=518 Value=316.000
Nr= 12 Thermal.Stress Motor% FCadr=  1 PNU=519 Value=0.000
Nr= 13 Thermal Stress VLT   FCadr=  1 PNU=520 Value=0.000
Nr= 10 Motor-Vol Voltage     FCadr=  1 PNU=518 Value=316.000
Nr= 12 Thermal.Stress Motor% FCadr=  1 PNU=519 Value=0.000
Nr= 13 Thermal Stress VLT   FCadr=  1 PNU=520 Value=0.000
Nr= 14 Digital-Input        FCadr=  1 PNU=521 Value=0008
Nr=  4 Setpoint             FCadr=  1 PNU=509 Value=60.000
Nr=  5 Setpoint             FCadr=  1 PNU=510 Value=29.999
Nr=  6 Current Value        FCadr=  1 PNU=511 Value=0.000
Nr=  7 Frequency            FCadr=  1 PNU=512 Value=30.000
Nr=  8 Motor-Current        FCadr=  1 PNU=514 Value=0.030
Nr=  9 Power                FCadr=  1 PNU=515 Value=0.000
Nr= 10 Motor-Voltage        FCadr=  1 PNU=517 Value=21.700
Nr= 11 Internal-Voltage     FCadr=  1 PNU=518 Value=316.000
Nr= 12 Thermal.Stress Motor% FCadr=  1 PNU=519 Value=0.000
Nr= 13 Thermal Stress VLT   FCadr=  1 PNU=520 Value=0.000
Nr= 14 Digital-Input        FCadr=  1 PNU=521 Value=0008
Nr=  4 Setpoint             FCadr=  1 PNU=509 Value=60.000
Nr=  5 Setpoint             FCadr=  1 PNU=510 Value=29.999
Nr=  6 Current Value        FCadr=  1 PNU=511 Value=0.000
Nr=  7 Frequency            FCadr=  1 PNU=512 Value=30.000
Nr=  8 Motor-Current        FCadr=  1 PNU=514 Value=0.030
Nr=  9 Power                FCadr=  1 PNU=515 Value=0.000
Nr= 10 Motor-Voltage        FCadr=  1 PNU=517 Value=21.700
Nr= 11 Internal-Voltage     FCadr=  1 PNU=518 Value=316.000
Nr= 12 Thermal.Stress Motor% FCadr=  1 PNU=519 Value=0.000
Nr= 13 Thermal Stress VLT   FCadr=  1 PNU=520 Value=0.000
Nr= 14 Digital-Input        FCadr=  1 PNU=521 Value=0008
Nr=  4 Setpoint             FCadr=  1 PNU=509 Value=60.000
Nr=  5 Setpoint             FCadr=  1 PNU=510 Value=29.999
```

2. Telegram fault (either after the power supply has been removed from the RS232/RS485 converter or when the VLT has stopped responding).

```
Nr=  9 Power                FCadr=  1 PNU=515 Value=0.000
Nr= 10 Motor-Voltage        FCadr=  1 PNU=517 Value=21.700
Nr= 11 Internal-Voltage     FCadr=  1 PNU=518 Value=317.000
Nr= 12 Thermal.Stress Motor% FCadr=  1 PNU=519 Value=0.000
Error: FCadr=  1 PNU=520 Code=0007 : Tg-Length-Error!
Error: FCadr=  1 PNU=520 Code=0000 : No Response from FC!
Error: FCadr=  1 PNU=520 Code=0000 : No Response from FC!
Error: FCadr=  1 PNU=521 Code=0000 : No Response from FC!
Error: FCadr=  1 PNU=521 Code=0000 : No Response from FC!
Error: FCadr=  1 PNU=521 Code=0000 : No Response from FC!
Error: FCadr=  1 PNU=509 Code=0000 : No Response from FC!
Error: FCadr=  1 PNU=509 Code=0000 : No Response from FC!
Error: FCadr=  1 PNU=509 Code=0000 : No Response from FC!
Error: FCadr=  1 PNU=510 Code=0000 : No Response from FC!
```

The cause of the fault is shown at the end of the line in plain text and in hexadecimal format as a fault code.

Note
The test jumper can also be removed and inserted during operation (activate and de-activate the monitoring circuit).

Important
When monitoring has finished, the test jumper should be reset to RUN, otherwise the AS will change to download mode after a reset (watchdog, malfunction etc.) and will then cease to communicate.

11 Language settings

For use with other languages, the *Excel* application can be set accordingly using the language-text table provided. To do so, the table's protection has to be removed (no password).
The German text in column A can then be translated line by line into another language (e.g. English) in column B.
To choose a language, the number at the end of the 'Title' document property should be set to the appropriate column number (A = 1 , B = 2 etc.). This property can be found under 'File' menu → Properties → 'File info' tab.
The language-text table should then be protected again (without password) in order to prevent any accidental changes.

The window in question is shown below (for default = German = 1).